

Glossary / Commonly Used Resurfacing Terms

A

AASHTO

American Association of State Highway and Transportation Officials¹

Absolute Viscosity (also called "dynamic viscosity")

A measure of the viscosity of asphalt with respect to time, measured in poises, conducted at 60°C (140°F).¹

Acceptance

Sampling, testing, and the assessment of test results to determine whether or not the quality of produced material or construction is acceptable in terms of the specifications.¹

ACI

American Concrete Institute.¹

ACPA

American Concrete Pavement Association.¹

Admixture

The ingredients in Portland Cement Concrete (PCC) other than aggregate, portland cement and water. Typically, an admixture is added to alter a specific PCC property such as workability, setting time, strength or durability.¹

Aggregate

A collective term for the mineral materials such as sand, gravel and crushed stone that are used with a binding medium (such as water, bitumen, portland cement, lime, etc.) to form compound materials (such as asphalt concrete, portland cement concrete, etc.).¹

Aggregate Blending

Combining multiple aggregate sources to produce a desired set of properties. Usually aggregate blending is done to improve or change gradation.¹

Aggregate Interlock

The mechanical locking which forms between the fractured surfaces along the crack below the joint saw cut (from the American Concrete Pavement Association).¹

Agitation

The process of providing gentle motion in mixed concrete just sufficient to prevent segregation or loss of plasticity.¹

Air Voids

Hot Mix Asphalt: Internal spaces in a compacted pavement mix, expressed as a percentage by volume of the total compacted mix. The ideal pavement mix has between 3% - 7% air voids. Too little air voids does not allow the pavement to be flexible under varying temperatures. Too many air voids can lead to premature failure of the pavement.²

Portland Cement Concrete: see 'Entrained Air'

Alkali-Aggregate Reaction

The expansive reaction that takes place in PCC between alkali (contained in the cement paste) and elements within an aggregate..¹

Alligator cracking (also called "fatigue cracking")

A series of interconnected cracks caused by fatigue failure of the Hot Mix Asphalt surface (or stabilized base) under repeated traffic loading.¹

APA

Asphalt Pavement Alliance.

Apparent Specific Gravity

The ratio of the mass in air of a unit volume of an impermeable material at a stated temperature to the mass in air of equal density of an equal volume of gas-free distilled water at a stated temperature.¹¹

Asphalt

A dark brown to black cementitious material in which the predominating constituents are bitumens, which occur in nature or are obtained in petroleum processing.¹

Asphalt Binder

The principal asphaltic binding agent in Hot Mix Asphalt . "Asphalt binder" includes asphalt cement as well as any material added to modify the original asphalt cement properties.¹

Asphalt Cement

A fluxed or unfluxed asphalt specially prepared as to quality and consistency for direct use in the manufacture of bituminous pavements, and having a penetration at 25° C (77° F) of between 5 and 300, under a load of 100 g applied for 5 s.¹

Asphaltenes

The high molecular weight hydrocarbon fraction precipitated from asphalt by a designated paraffinic naphtha solvent at a specified solvent-asphalt ratio.¹

Asphalt Institute

A U.S.-based association of international petroleum asphalt/bitumen producers, manufacturers, and affiliated business.¹

B

Backcalculation

A mechanistic evaluation of pavement surface deflection basins generated by various pavement deflection devices. Backcalculation takes a measured surface deflection and attempts to match it (to within some tolerable error) with a calculated surface deflection generated from an identical pavement structure using assumed layer stiffness (moduli).¹

Backfilling

The process of placing topsoil or stone along the edges of new pavement to help support the edge and to create a safe and suitable transition to the surrounding elevations. When done correctly, it provides a medium to allow the water to flow off of, and away from the paved surface.²

Backhoe

A power-driven excavating vehicle with a hinged bucket at the end of a long, jointed arm. It digs by drawing the bucket toward the power unit.²

Base Course

The portion of a pavement structure immediately beneath the surface course. Its major function is structural support and usually consists of aggregate and can be either stabilized or unstabilized.¹

Batch Plant

A manufacturing facility for producing Hot Mix Asphalt or PCC that makes the product in batches rather than continuously.¹

Bid

The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.³

Bidding Documents

The Bidding Requirements and the proposed Contract Documents (including all Addenda).³

Bidder

The individual or entity who submits a Bid directly to the Owner.³

Binder Course

The layer in the pavement system between the wearing course and the base course. It usually consists of a maximum aggregate size of 19mm (3/4"), providing additional strength to the overall pavement system. This layer is often only used in roadway construction.²

Bitumens

A class of black or dark-colored (solid, semi-solid or viscous) cementitious substances, natural or manufactured, composed principally of high molecular weight hydrocarbons, of which asphalts, tars, pitches, and asphaltenes are typical.¹

Bituminous Concrete Base Course (BCBC)

The name given to the base course pavement designed using the Marshall mix design method.²

Bleeding

In Hot Mix Asphalt "bleeding" is a film of asphalt binder on the pavement surface caused by the upward migration of asphalt binder in an Hot Mix Asphalt pavement. It is also called "flushing." In PCC "bleeding" is the flow of mixing water from freshly placed PCC.¹

Block cracking

In flexible pavements, interconnected cracks that divide the pavement up into rectangular pieces.¹

Blowup (or buckling)

A localized upward PCC slab movement and shattering at a joint or crack. Usually occurs in spring or summer and is the result of insufficient room for slab expansion during hot weather.¹

Borrow

Suitable material from sources outside the roadway prism used primarily for embankments.⁴

Break and Seat

A process used to prevent joint reflective cracking in an Hot Mix Asphalt overlay over old PCC pavement. It involves breaking up the underlying rigid pavement into relatively small pieces (on the order of about 0.3 m² to 0.6 m² (1 ft² to 2 ft²) by repeatedly dropping a large weight. The pieces are then seated by 2 to 3 passes of a large rubber tired roller.¹

Breaking

The phenomenon when asphalt and water separate in an asphalt emulsion, which is the beginning of the curing process.¹

Brooming

The practice of texturing a freshly placed PCC surface by dragging a stiff broom across it.¹

Bulk Specific Gravity

The ratio of the mass in air of a unit volume of a permeable material (including both permeable and impermeable voids normal to the material) at a stated temperature to the mass in air of equal density of an equal volume of gas-free distilled water at a stated temperature.¹¹

Bumps and Sags

Small, localized, upward displacements of the pavement surface.⁵

Butt Joint

Pavement transitions created at the beginning and end of a paved section.⁸

C

Capillary Action

The rise or movement of water in the voids of a soil caused by capillary forces.⁴

CBR

California Bearing Ratio. A strength test typically used on unconfined granular material.¹ To calculate CBR, a penetration test is performed on both a standard material (crushed gravel) and the measured material at uniform rate of strain. The CBR is expressed as a ratio or percent. For example, a CBR of 15% means that the measured material offers 15% of the resistance to penetration than the standard material does.

Cementitious

Having cementing properties (set and harden in the presence of water).¹

Cement mortar

A combination of cementitious material (usually portland cement), water and sand (fine aggregate). It does not include coarse aggregate.¹

Cement Paste

A combination of cementitious material (usually portland cement) and water. It does not include any aggregate.¹

Cement-Treated Base

Cement-treated base consists of specified soil aggregates and Portland Cement Concrete mixed in a pug mill and deposited on the subgrade to the specified thickness.⁴

Cessation Temperature

As Hot Mix Asphalt cools, the asphalt binder eventually becomes viscous enough to effectively prevent any further reduction in air voids regardless of the applied compactive effort. As a rule-of-thumb the temperature at which this occurs, commonly referred to as cessation temperature, and is about 79°C (175°F) for dense-graded Hot Mix Asphalt. The grade of PG binder is known to have somewhat of an effect on cessation temperature.¹

Checking

Hairline surface cracks in an Hot Mix Asphalt mat caused by steel wheel rollers. Usually a result of over-compaction or attempting to compact the mat below cessation temperature.¹

CIR

Cold In-Place Recycling. A general term for processes using grinding machines to recycle pavement into base material for new paving. CIR often uses additives such as emulsions or foamed asphalt for stabilization.¹

Client

The party of which professional services are rendered, as by an attorney.⁶

Coal Tar Seal

Coal tar sealer shields asphalt surfaces from the damaging elements of weather and protects against the harmful effects of chemicals and petroleum products. Coal Tar shall meet Federal specification R-P355e and ASTM Specification D-3320.⁴

Coarse Aggregate

Defined by the Asphalt Institute (2001) as the fraction of aggregate retained on the No. 8 (2.36 mm) sieve. Defined by AASHTO M 147 as hard, durable particles or fragments of stone, gravel or slag retained on the No. 10 (2.00 mm) sieve.¹

Coarse Graded Aggregate

An aggregate having a continuous grading in size of particles from coarse through fine with a predominance of coarse sizes.⁴

Cold Feed Bins

Bins that store the necessary aggregate size and feed them to the dryer drum of the asphalt plant in substantially the same proportions as required by the Job Mix Formula for the mix being produced.¹¹

Cold Mix

A mixture of emulsified asphalt and aggregate; produced in a central plant (plant mix) or amixed at the road site (mixed-in-place).¹¹

Cold Planer

A self-propelled construction machine, or an attachment for a construction machine, specifically designed to mill the surface of existing pavement. It consists of a rotating drum with cutting teeth to mill the surface of the existing pavement to the desired depth.²

Compaction

The process of densifying a material (Hot Mix, soil, aggregate) packing the aggregate particles together to remove as much of the air voids as possible. Compaction provides strength and in the case of Hot Mix Asphalt provides resistance to rutting, seals the surface from the ingress of water, and gives a smooth riding surface.²

Compactive Effort

The combined effect of (1) applying weight to an Hot Mix Asphalt surface and compressing the material underneath the ground contact area and (2) creating a shear stress between the compressed material underneath the ground contact area and the adjacent uncompressed material.¹

Composite Pavements

Combination Hot Mix Asphalt and PCC pavements. Occasionally, they are initially constructed as composite pavements, but more frequently they are the result of pavement rehabilitation (e.g., Hot Mix Asphalt overlay of PCC pavement). Officially, the FHWA "composite pavement" category is defined as a "mixed bituminous or bituminous penetration roadway" of more than 25 mm (1 inch) of compacted material on a rigid base (from the FHWA).¹

Consultant

The professional who provides advice in a particular area of expertise such a management or engineering on behalf of the client.⁷

Contract

The written agreement executed between the contractor and other parties, setting forth the obligations of the parties thereunder; including, but not limited to the performance of the work, the furnishing of labor and materials, and a basis of payment. This could also mean an agreement between a client and a consultant.⁴

Contraction Joint

A sawed, formed, or tooled groove in a concrete slab that creates a weakened vertical plane. It regulates the location of the cracking caused by dimensional changes in the slab.¹

Contractor

The individual, partnership, corporation, or joint venture contracting for performance of prescribed work.⁴

Consistency

Describes the degree of fluidity or plasticity of asphalt binder at any particular temperature. The consistency of asphalt binder varies with temperature; therefore, it is necessary to use a common or standard temperature when comparing the consistency of one asphalt binder with another.¹¹

Consolidation

The process of making the freshly placed PCC into a more uniform and compact mass by eliminating undesirable air voids (entrapped air) and causing it to move around potential obstructions (such as reinforcing steel). Sometimes this process is referred to as "compaction" however this Guide attempts to make a distinction between *consolidating* PCC and *compacting* Hot Mix Asphalt - two very different processes.¹

Construction Joint

A discontinuity in a PCC pavement where placement has been halted for an extended period of time.¹

Continuous Mix Plant

A manufacturing facility for producing asphalt paving mixtures that proportions those aggregate and asphalt constituents into the mix by a continuous volumetric proportioning system without definite batch intervals.¹¹

Corner Break

A crack that intersects the PCC slab joints near the corner.¹

Corrugation

A pavement surface distortion perpendicular to the traffic direction caused by plastic movement and typified by ripples across a pavement surface. Usually caused by vehicle starting and stopping.¹

Coverage

The roller moving the entire width of the mat one time.²

Crown

The raised center of a cambered road creating a minimum of 1.5% - 2% slope to the edge of the

pavement. The crown is essential for proper drainage of precipitation off the road surface. Not recommended for a single width road as it will not permit proper snow removal with a plow.²

Crazing

Shallow, fine, or hairline cracks that extend only through the upper surface of the concrete.⁵

CRCP

Continuously Reinforced Concrete Pavement. CRCP uses reinforcing steel for crack control. Cracks are allowed to form and held tightly together by underlying reinforcing steel.¹

Crude Oil

Unrefined petroleum.¹

Crushed Stone

The product resulting from the artificial crushing of rocks, boulders, or large cobblestones with the particles resulting from the crushing operation having all faces fractured.⁴

Crusher Run

Aggregates that have received little or no screening after initial crushing operations. Crusher run aggregates are generally more economical than screened aggregates.⁴

Cul-de-sac

An area at the terminus of a dead-end street or road constructed for the purpose of allowing a vehicle to turn around.⁴

Culvert

Any structure that is not classified as a bridge and that provides an opening under any roadway.⁴

Curing

The maintenance of satisfactory moisture and temperature within a PCC mass as it sets and hardens such that the desired properties of strength, durability and density can develop (from the Portland Cement Association).¹

Cut

The portion of the roadway formed by excavation below the surface of the earth.⁴

Cutback Asphalt

Asphalt cement that has been liquefied by blending with petroleum solvents. Upon exposure to atmospheric conditions, the solvents evaporate, leaving the asphalt cement to perform its function.⁴

D

"D" Cracking

See "durability cracking".¹

DBR

Dowel Bar Retrofit. Rehabilitation process performed on aged JPCP rigid pavements to reestablish load transfer between pavement slabs.

Deep Lift Asphalt Pavement

A pavement in which the asphalt base course is placed in one or more lifts of 4 or more inches compacted thickness.⁴

Dense-graded Mix

Refers to an Hot Mix Asphalt mix design using an aggregate gradation that is near the FHWA's 0.45 power curve for maximum density. These are the most common Hot Mix Asphalt mix designs in the U.S.¹

Density

The degree of solidity (compaction) that can be achieved in a given mixture, which will be limited only by the total elimination of voids (zero air voids) between particles in the mass. Density is expressed as percentage of the maximum specific gravity of the mix.¹¹

Depression

Localized pavement surface areas with slightly lower elevations than the surrounding pavement.¹

Design Thickness

The total pavement structure thickness above the subgrade.⁴

Diamond Grinding

A rigid pavement maintenance action where diamond saw blades are used to shave off a thin top layer of an existing PCC surface in order to restore smoothness and friction characteristics.¹

Distortion

Shoveling or rippling in surfacing material displaced crossways to the direction of traffic. It can develop into washboarding when the asphalt mixture is unstable because of poor quality aggregate or improper mix design.⁹

Divided Slab

Four or more cracked pieces in a slab due to overloading, or inadequate support, or both.⁵

Dowel Bars

Short steel bars that provide a mechanical connection between slabs without restricting horizontal joint movement. They increase load transfer efficiency by allowing the leave slab to assume some of the load before the load is actually over it.¹

Drainage

Structures and facilities for collecting and carrying away water.⁴

Drum Plant

A manufacturing facility for producing Hot Mix Asphalt. They manufacture Hot Mix Asphalt continuously rather than in batches.¹

Dryer

The component of the asphalt plant that dries and heat the aggregates to specified temperatures.¹¹

Ductility

The ability of a substance to be drawn out or stretched thin.¹¹

Dump Truck

A heavy-duty truck with a bed that tilts backward to dump loose material (i.e. aggregate or asphalt pavement).¹

Durability

A measure of how asphalt binder or PCC physical properties change with age. In general, as an asphalt binder ages, its viscosity increases and it becomes more stiff and brittle (sometimes called age hardening), and as a PCC ages freeze-thaw cycles and chemical attack degrade it.¹

Durability Cracking

In PCC, a series of closely spaced, crescent-shaped cracks near a joint, corner or crack. It is caused by freeze-thaw expansion of the large aggregate within the PCC slab. Durability cracking is a general PCC distress and is not unique to pavement PCC.¹

Dynamic Viscosity (also called "absolute viscosity")

A measure of the viscosity of asphalt with respect to time, measured in poises, conducted at 60°C (140°F).¹

E

Earthwork

The work consisting of the construction of the roadway, excluding bridges, pavement structure, and selected capping material.⁴

Edge Cracking

Edge cracks are parallel to and usually 1 to 1.5 ft of the outer edge of the pavement. This distress is accelerated by traffic loading and can be caused by frost-weakened base or subgrade near the edge of the pavement.⁸

Effective Asphalt Content

The total asphalt content of a mix minus the portion of asphalt absorbed into the aggregate particles.¹¹

Effective Specific Gravity

The ratio of the mass in air of a unit volume of a permeable material (excluding voids permeable to asphalt) at a stated temperature to the mass in the air of equal density of an equal volume of gas-free distilled water at a stated temperature.¹¹

Elastic Modulus

The relationship between stress and strain within a material's elastic range. Thus, the "flexibility" of any object depends on its elastic modulus and geometric shape; however, it is important to note that strength (stress needed to break something) is not the same thing as stiffness (as measured by elastic modulus).¹

Embankment

A structure of soil, soil aggregate, or broken rock between the embankment foundation and the subgrade.⁴

Emulsified Asphalt

An emulsion of asphalt cement and water that contains a small amount of an emulsifying agent, a heterogeneous system containing two normally immiscible phases (asphalt and water), in which the water forms the continuous phase of the emulsion and minute globules of asphalt form the discontinuous phase.⁴

Emulsifying Agent

A substance used in asphalt emulsions to assist the formation of small asphalt cement globules in water by imparting an electrical charge to the surface of the asphalt cement globules so that they do not coalesce.¹

Emulsion

A suspension of small asphalt cement globules in water. The suspension is assisted by an emulsifying agent.¹

Entrained Air

Air included in PCC on purpose. Entrained air is usually added to mitigate the effects of freeze-thaw damage.¹

Entrapped Air

Air present in PCC but not included by design. Entrapped air usually is not sufficient to mitigate freeze-thaw damage due to its low volume and poor dispersion.¹

Equipment

All machinery, tools, and other apparatus, together with the necessary supplies for upkeep and maintenance, needed for the proper construction and acceptable completion of the work.⁴

Erosion

Removal and transportation of soil by the action of water or wind.⁴

ESAL

Equivalent Single Axle Load. The most common approach to determining traffic loading is to convert wheel loads of various magnitudes and repetitions to an equivalent number of "standard" or "equivalent" loads. The most commonly used equivalent load in the U.S. is the 80 kN (18,000 lbs.) equivalent single axle load.¹

Excavation

The act of digging, or of making hollow, by cutting or scooping out a part of the ground.²

Expansion Joint

An intentional discontinuity in a PCC pavement placed at a specific location to allow the pavement to expand without damaging adjacent structures or the pavement itself.¹

F

Facility ID

A specific GIS based number used by the City of Durham to designate a street segment.

Fatigue Cracking (also called "alligator cracking")

Cracks caused by fatigue failure of an Hot Mix Asphalt surface (or stabilized base) under repeated traffic loading.¹

Fatigue Resistance

The ability of asphalt pavement to withstand repeated flexing or slight bending caused by the passage of wheel loads.¹¹

Faulting

In rigid pavement, a difference in elevation across a joint or crack. Usually the approach slab is higher than the leave slab due to pumping, the most common faulting mechanism.¹

FDR

Full-Depth Reclamation is a process that rebuilds worn out asphalt pavements by recycling the existing roadway. FDR can be used to depths of 30 mm (12 inches) or more but the most typical applications involve depths of between 150 and 225 mm (6 and 9 inches).¹

FHWA

Federal Highway Administration.

Fine Aggregate

Aggregate particles passing a No. 8 sieve.⁴

Fine Graded Aggregate

An aggregate having a continuous grading in sizes of particles from coarse through fine with or predominance of fine sizes.⁴

Fineness

A measure of the particle size of portland cement.¹

Fixed Form PCC paving

One of two chief methods of PCC paving. In fixed form paving, side forms are used to hold fresh PCC in place at the proper grade and alignment until it sets and hardens. These forms may also serve as tracks for various pieces of placing and finishing equipment.¹

Flexible Pavement

Pavements that are surfaced with bituminous (or asphalt) materials as the surface course. These can be either in the form of pavement surfaces such as a bituminous surface treatment (BST) generally found on lower volume (or lower traffic) roads, or Hot Mix Asphalt surfaces generally used on higher volume roads. These types of pavements are called "flexible" since the total pavement structure "bends" or "deflects" due to traffic loads.¹

Floating

Running a flat surface across freshly placed PCC in order to eliminate high and low spots, embed larger aggregate particles beneath the surface, remove slight imperfections and compact the mortar at the surface in preparation for texturing (PCA, 1988).¹

Flushing (also called "bleeding")

A film of asphalt binder on the pavement surface caused by the upward migration of asphalt binder in an Hot Mix Asphalt pavement.¹

Flux

A bituminous material, generally liquid, used for softening other bituminous materials.¹

Fog seal

A light application of a slow-setting asphalt emulsion to the surface of an aged (oxidized) pavement surface.¹

Free Water (Groundwater)

Water that is free to move through a soil mass under the influence of gravity.⁴

French Drain

A trench loosely backfilled with stones, the largest being placed on the bottom with the size decreasing toward the top.⁴

Full-depth Asphalt

An Hot Mix Asphalt pavement structure using Hot Mix Asphalt products for all components. The base material and surface courses are made of Hot Mix Asphalt instead of aggregate or other material.¹

FWD

Falling Weight Deflectometer. The FWD is an impact load device used to deliver a transient impulse load to the pavement surface and measure the resultant pavement response (its deflection) by a series of sensors.¹

G

Geotextiles

Fabric-like materials used in the paving process. Geotextiles are manufactured for specific uses and performance characteristics. Some uses include stabilization of base material to prevent migration of fines from the subgrade into the base material, retarding of reflective cracking in asphalt overlays, and serving as a moisture barrier between pavement layers (NPCA).¹

Gradation

The distribution of aggregate particle sizes. Aggregate gradation is a way of describing the proportions of the various sizes of crushed stone, sand and filler, by passing the aggregate through a set of sieves and measuring the weight retained on each sieve.²

Grade (Gradient)

The pitch of a slope, often expressed as a percent tangent, or "rise over run". It is used to express

the steepness of slope on a hill , roof , or road , where zero indicates level (with respect to gravity) and increasing numbers correlate to more vertical inclinations.²

Grader

A piece of heavy equipment used to level or smooth road or other surfaces to the desired gradient.²

Gravel Borrow

Generally "gravel borrow" refers to high quality granular fill. This granular fill may contain a substantial amount of soil but it is generally devoid of most clays/silts and other deleterious material.¹

Ground Penetrating Radar

Ground penetrating radar (GPR) is a noninvasive tool that has been used to map subsurface conditions in a wide variety of applications.¹ It can provide pavement layer thicknesses and locate voids beneath the pavement surface.

H

Hand Tamper

A hand tool, consisting of a long handle with a steel plate on the end measuring approximately 8” square. It is typically used to compact the edges of the new pavement or other small areas that motorized compaction equipment is unable to access.¹

Hot Bins

Bins in a batch plant that store the heated and separated aggregates prior to their final proportioning into the mixer.¹¹

HIPR

Hot In-Place Recycling. A pavement recycling method that heats and rejuvenates an existing pavement surface (typically using propane radiant heaters and a rejuvenating agent) in place then mixes and levels the recycled mix using a standard auger system.¹

HMA

Hot Mix Asphalt. A high quality, thoroughly controlled hot mixture of asphalt binder and aggregate that can be compacted into a uniform dense mass.¹

Hydration

Chemical reaction involving the addition of water. In portland cement, the chemical compound

constituents undergo a series of chemical reactions in the presence of water that cause it to harden (or set).¹

Hydraulic Cement

An inorganic material or a mixture of inorganic materials that sets and develops strength by chemical reaction with water by formation of hydrates and is capable of doing so under water (from ASTM C 125 and the Portland Cement Association).¹

Hydrostatic Pressure

The pressure in a liquid under static conditions; the product of the unit weight of the liquid and the difference in elevation between the given points and the free water elevation.⁴

I

Ice Lens

Subterranean ice crystals that form along the plane of freezing temperature. Water migrates up from below (where the temperature is above freezing) then freezes once it reaches the freezing depth in a soil forming an ice lens.¹

Impermeability

The resistance an asphalt pavement has to the passage of air and water into or through the pavement.¹¹

Improved Subgrade

Any course or courses of select or improved material between the foundation soil and the subbase is usually referred to as the improved subgrade. The improved subgrade can be made up of two or more courses of different quality materials.⁴

Independent Assurance

A management tool that requires a third party, not directly responsible for process control or acceptance, to provide an independent assessment of the product and/or the reliability of test results obtained from process control and acceptance testing. The results of independent assurance tests are not to be used as a basis of product acceptance.¹

In-situ

In place, in its original location.¹

Isolation Joint

An intentional discontinuity in a pavement used to lessen stresses that may develop due to differential movement between a pavement and a structure or another existing pavement.¹

Isotropic

Refers to properties that are the same regardless of the direction that is measured. Properties that are the same everywhere.¹

J

JMF

Job-Mix Formula. A recommended/specified mixture of aggregate and asphalt binder.¹

Joint Reflection Cracking

Cracks in a flexible overlay of a jointed rigid pavement. The cracks occur directly over the underlying rigid pavement joints.¹

Joint Seal Damage

Any condition that enables soil or rocks to accumulate in the joints or allows significant water infiltration.¹

JPCP

Jointed Plain Concrete Pavement. The most common type of rigid pavement, JPCP controls cracks by dividing the pavement up into individual slabs separated by contraction joints.¹

JRCP

Jointed Reinforced Concrete Pavement. JRCP controls cracks by (1) dividing the pavement up into individual slabs separated by contraction joints and (2) using reinforcing steel within each slab to control within-slab cracking.¹

K

L

Lane Joint Cracks

Longitudinal separations along the seam between two paving lanes caused by a weak seam between adjoining spreads in the courses of the pavement.¹¹

Lane/shoulder drop-off

A difference in elevation between the traffic lane and the shoulder.¹

Laydown

The portion of the Hot Mix Asphalt paving process where the Hot Mix Asphalt is actually placed or "laid down" by the paving machine.¹

Lean Concrete

PCC that contains less portland cement paste than a typical PCC.¹

LEF

Load Equivalency Factor. The output from the ESAL equation. This factor relates various axle load combinations to the standard 80 kN (18,000 lb.) single axle load.¹

Leveling Course

A first lift applied to an existing pavement used to fill in ruts and make up elevation differences.¹

Lift

A layer or course of paving material. Typically refers to flexible pavements. Hot Mix Asphalt is often placed in multiple layers based on compaction and smoothness considerations.¹

Linear Cracking

PCC panel cracks not associated with corner breaks or blowups that extend across the entire slab.¹

Linear Elastic

A material property meaning that an object or material will return to or is capable of returning to an initial form or state after deformation in a linear manner.¹

Liquid Asphalt

An asphalt material having a soft or fluid consistency that is beyond the range of measurement by the normal penetration test, the limit of which is 300 maximum. Liquid asphalts include cutback asphalt and emulsified asphalts.⁴

Liquid Limit

The water content above which a soil behaves as a viscous liquid (i.e. its shearing strength is negligible).¹

Load Transfer

The transfer or distribution of load across pavement discontinuities such as joints or cracks (from the 1993 AASHTO *Guide*).¹

Longitudinal Cracking

In flexible pavements, cracks parallel to the pavement's centerline or laydown direction.¹

Longitudinal Joint

Formed when a new mat is placed alongside an existing mat.²

Lot

An amount of material or items of similar origin grouped together for quality analysis purposes.¹

M

Macadam

Type of early bituminous pavement named after its inventor, a Scotsman named John McAdam (1756 – 1836). McAdam (sometimes spelled "Macadam") pavements used smaller angular aggregate over larger angular aggregate over a well-compacted, sloped subgrade.¹

Maltenes

Non-polar or relatively low-polarity molecules within asphalt cement.¹

Manual Proportioning Control

A control system in which proportions of the aggregate and asphalt fractions are controlled by means of gates or valves which are opened and closed by manual means.¹¹

Map Cracking

Shallow, fine, or hairline cracks that extend only through the upper surface of the concrete.⁵

Marshall

A method of mix design developed by the U.S. Army Corps of Engineers (USACE) and adapted by the Asphalt Institute, for the design of mixes for highway pavements in the United States and abroad, using impact compaction.²

Materials

Any substances specified for use in the construction of the project and its appurtenances.⁴

Mat

A term used to describe the fresh asphalt surface behind the paving machine. Most commonly used to refer to the asphalt during the placement and compaction phase of construction.¹

Mat Tearing

A term used to describe the pulling of the Hot Mix Asphalt under the screed of the paver. Generally results in coarse-textured streaks behind the paver.¹

Maturity

A term used to describe the estimated extent of PCC hydration by tracking time and temperature.¹

Medium Curing Asphalt

Liquid asphalt composed of asphalt cement and a kerosene-type diluent of medium volatility.⁴

Mesh

The square opening of sieve.¹¹

Microsurfacing

An advanced form of slurry seal that uses the same basic ingredients (asphalt emulsion, fine aggregate and mineral filler) and combines them with advanced polymer additives to produce a more capable end product.¹

Milling

A process by which the surface of existing pavement is grinded down to the desired depth utilizing a cold planer. This is typically done for one of the following reasons: to create a smooth transition between the new and existing paving, to remove inconsistencies in the existing pavement prior to an overlay, or to remove a layer of pavement to prevent elevation problems prior to an overlay.²

Mineral Dust

The portion of the fine aggregate passing a No. 200 sieve.⁴

Mineral Filler

A finely divided mineral product, at least 70 percent of which will pass a 0.075 mm (No. 200) sieve.¹

MTV

Material Transfer Vehicle. Used to assist the paver in accepting Hot Mix Asphalt.¹

N

NAPA

National Asphalt Pavement Association.¹

NCAT

National Center for Asphalt Technology.¹

NCDOT

North Carolina Department of Transportation.

Natural Asphalt

Asphalt occurring in nature that has been derived from petroleum by natural processes of evaporation of volatile fractions leaving the asphalt fractions.⁴

Newtonian Fluid

A fluid whose viscosity is constant at all shear rates. Since Isaac Newton first published the properties of an ideal fluid, ideal fluids are often called "Newtonian fluids".

NFS

Not Frost Susceptible.¹

Non-Newtonian fluid

A fluid whose viscosity is not constant at all shear rates.¹

Non-Pavement Distresses

Deteriorating sidewalks and curb and gutter as well as in-pavement appurtenances such as manholes and valve boxes.⁸

O

Open Graded Aggregate

An aggregate containing little or no mineral filler or in which the void spaces in the compacted aggregate are relatively large.⁴

Open Graded Asphalt Friction Course

A pavement structure course that consists of a high void, asphalt plant mix that permits rapid drainage of rainwater through the course and out the shoulder.¹¹

Optimum moisture Content

In a soil, the moisture content at which maximum density can be achieved.¹

Overlay

A method of adding another layer of Hot-Mix Asphalt wearing course to an existing pavement to provide additional strength and a smoother surface. This is a common method for restoring older pavement on a road, parking lot or driveway. Also referred to as a resurface or cap.²

P

Pass

The entire roller moving over one point in the mat one time.²

Patches

Original surface repaired with new asphalt patch material. This indicates a pavement defect or utility excavation which has been repaired. Patches with cracking, settlement or distortions indicate underlying causes still remain.⁹

Paver

A piece of heavy equipment, usually consisting of a tractor unit and a screed that is used to spread and level Hot-Mix Asphalt pavement.¹

Pavement Structure

All courses of selected material placed on the foundation or subgrade soil, other than any layers or courses constructed in grading operations. When the asphalt pavement is on an old Portland Cement Concrete base or other rigid-type base, the pavement structure is referred to as a combination or composite-type pavement structure.¹

Pay Factor

A multiple applied to the contract price of a particular item.¹

Pay Request / Pay Requisition

Used to request payment for goods and services.

PCC

Portland Cement Concrete.¹

PCR

Pavement Condition Rating. This is a number 1 though 10 given to a surface condition of a road after a Pavement Condition Survey where 10 is excellent and 1 is failing.⁹

PCS

Pavement Condition Survey. The results of this survey are the basis for developing maintenance needs by visually collecting pavement distresses (alligator cracking, raveling, patching and block/traverse cracking) data by visual inspection.

PD

Percent Defective. The percentage of the lot falling outside specification limits.¹

Penetration

The consistency of a bituminous material expressed as the distance in tenths of millimeter that a standard needle vertically penetrates a sample of the material under specified condition of load, time, and temperature.¹¹

Percolation

The movement of free water through soil.⁴

Performance Graded (PG)

Asphalt binder grade designations use in Superpave; based on the binders mechanical performance at critical temperatures and aging conditions.¹¹

Permeability

A property describing the degree to which a material can be permeated or penetrated, especially by liquids or gases.¹

Perpetual Pavement

Long-lasting Hot Mix Asphalt pavement.¹

Plans

The standard drawings current on the date bids are received; and the official approved plans, profiles, typical cross sections, electronic computer output listings, working drawings and supplemental drawings, or exact reproductions thereof, current on the date bids are received; and all subsequent approved revisions thereto, which show the location character, dimensions, and details of the work to be done.⁴

Plant Mix

A mixture produced in an asphalt mixing plant, that consists of mineral aggregate uniformly coated with asphalt cement or liquid asphalt.⁴

Plant Screens

Screens located in a batch plant between the dryer and hot bins which separate the heated aggregates into the proper hot bins.¹¹

Plasticity Index (PI)

The numerical difference between the Liquid Limit and the Plastic Limit of a soil.¹

Plastic Limit

The water content below which a soil ceases to behave as a plastic medium and begins to exhibit the properties of a semisolid.¹

Poise

A centimeter-gram-second unit of absolute viscosity, equal to the viscosity of a fluid in which a stress of one dyne per square centimeter is required to maintain a difference of velocity of one centimeter per second between two parallel planes in the fluid that lie in the direction of flow and are separated by a distance of one centimeter.¹¹

Polishing

A smooth slippery surface caused by traffic wearing off sharp edges of aggregates.⁹

Polymer Modified Asphalt Binder

A conventional asphalt cement to which a styrene block copolymer or styrene butadiene rubber (SBR) latex or neoprene latex has been added to improve performance.¹¹

Popouts

Small pieces of PCC that break loose from the surface leaving small divots or pock marks.¹

Portland Cement

A hydraulic cement composed primarily of hydraulic calcium silicates (from the Portland Cement Association).¹

Pothole

Bowl-shaped openings in a pavement resulting from localized disintegration.¹

Pozzolan

A siliceous volcanic ash or artificial substance (such as fly ash) used to produce hydraulic cement.

Pre-Overlay Repairs

Repairs related to observed distresses including AC Patch / Level / Wedge, Partial Depth Patch, Full Depth Patch, Concrete Walk / Driveway, Curb and Gutter Repair, and Variable Milling.⁸

Prime Coat

An application of asphalt primer to an absorbent surface. Often used to prepare an untreated base for an asphalt surface. The prime coat penetrates or is mixed into the surface of the base and plugs the voids, hardens the top and helps bind it to the overlying asphalt course.¹

Proof Rolling

A technique used in the construction industry to test the suitability of the subgrade. It is typically performed by driving a fully loaded tandem-axle dump truck over the area to be tested. The engineer will look for deflection or rutting by the truck to determine if the subgrade is adequate to support the pavement structure.¹

Proposal

The offer of a bidder, submitted on the approved official form, to perform the work and to furnish the labor and material at prices set forth therein, valid only when properly signed and guaranteed.⁴

PSI

Present Serviceability Index. A pavement condition index.¹

PSR

Present Serviceability Rating. A definition of pavement serviceability based on individual observation.¹

Pumping

Pavement deflection (usually repeated) under traffic that sometimes results in the discharge of water and subgrade soils along joints, cracks and pavement edges.¹

Punchout

In rigid pavements (especially CRCP), a localized slab portion broken into several pieces.¹

PWL

Percent Within Limits. The percentage of the lot falling above a lower specification limit, below an upper specification limit, or between upper and lower specification limits. PWL is related to PD by the following: $PWL = 100\% - PD$.¹

Q

Quality

The totality of characteristics of a product or service that bears on its ability to satisfy stated and implied needs (from the Institute of Quality Assurance). In statistical acceptance plans "quality" is narrowly defined as the fraction of the overall quality characteristic distribution that falls within specification limits.¹

Quality Assurance

Planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service by testing no less than 10% of the work performed (commonly accepted by NCDOT).¹

Quality Characteristic

Those material characteristics or properties that a particular acceptance plan measures to determine quality.¹

Quality Control

Quality assurance actions and considerations necessary to assess production and construction processes so as to control the level of quality being produced in the end product. This concept of quality control includes sampling and testing to monitor the process but usually does not include acceptance sampling and testing. Also called process control.¹

Quality Management System (QMS)

North Carolina's name for its Quality Control/Quality Assurance (QC/QA) program for asphalt pavements in which the asphalt contractor is responsible for the quality control and the NCDOT is responsible for the quality assurance.¹¹

Quality Verification

Planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service by testing 5% of the work performed (commonly accepted by NCDOT).¹

Quarterly

Occurring once within each quarter of the calendar year, specifically, once during Jan.-Mar., once during Apr.-Jun., once during Jul.-Sep., and once during Oct.-Dec..¹¹

R

Railroad Crossing Defects

Depressions or bumps around, or between tracks, or both.⁵

Rapid Curing Asphalt

Liquid asphalt composed of asphalt cement and a naphtha- or gasoline-type diluent of high volatility.⁴

Raveling

In flexible pavements, the progressive disintegration of an Hot Mix Asphalt layer from the surface downward as a result of the dislodgement of aggregate particles.¹

RAP

Reclaimed Asphalt Pavement. RAP is typically generated by (1) milling machines in rehabilitation projects or (2) a special crushing plant used to break down large pieces of discarded Hot Mix Asphalt pavement.

RCM

Reclaimed Concrete Material. Same as RCP. When crushed, it can be used as a coarse aggregate in PCC, a granular base course or a fill/embankment material.¹

RCP

Recycled Concrete Pavement. Same as RCM. When crushed, it can be used as a coarse aggregate in PCC, a granular base course or a fill/embankment material.¹

Reactive Aggregate

Those that either expand or develop expansive by products when introduced to certain chemical compounds.

Reactive Aggregate Distress

Pattern or map cracking (crazing) on the PCC slab surface caused by reactive aggregates.¹

Ready-Mixed Concrete

PCC that is delivered to the customer in a freshly mixed and unhardened state (from the National Ready Mix Concrete Association).¹

Reflective Cracking

Cracks in an Hot Mix Asphalt overlay caused by cracks in the existing pavement "reflecting" up through the overlay.¹

Rehabilitation

The renewal of an existing surface or pavement structure by repair, recycling, or overlay techniques.⁴

Residuals

In petroleum refining, they are the left-overs from the refining process.¹

Resilient Modulus

An estimate of a material's elastic modulus based on stress and strain measurements from rapidly applied loads – like those that pavement materials experience from wheel loads.¹

Restricted Zone

A particular area of the FHWA's 0.45 power gradation graph associated with Superpave mix designs. It was observed that mixes closely following the 0.45 power maximum density line sometimes had unacceptably low VMA.¹

Resurfacing

A method of adding another layer of Hot Mix Asphalt wearing course to an existing pavement to

provide additional strength and a smoother surface. This is a common method for restoring older pavement on a road, parking lot or driveway. Also referred to as an overlay or cap.²

RHM

Recycled Hot Mix.¹

Rice Density (also called "TMD")

The theoretical maximum density of an Hot Mix Asphalt if it contained zero air voids.¹

Rigid Pavement

Pavements that are surfaced with PCC in the surface course. Since PCC has a high modulus of elasticity, rigid pavements do not flex appreciably to accommodate traffic loads.¹

Road

A general term denoting a public way for purpose of vehicular travel, including the entire area within the right-of-way.⁴

Roadbed

The graded portion of a highway within the top and side slopes, prepared as a foundation for the pavement structure and shoulders.⁴

Road Reclaimer

A self-propelled machine having a transverse cutting and mixing head inside of a closed chamber for the pulverization and mixing of existing pavement materials with asphalt emulsion.¹

Rock

From which crushed stone, sand, and gravel are made; the rock most suitable for making good aggregates.⁴

Rubblization

Reducing a material or structure to rubble. Regarding pavements, rubblization usually refers to reducing an existing rigid pavement to rubble in preparation for an Hot Mix Asphalt overlay. This helps prevent reflective cracking in the new overlay.¹

Rutting

Surface depressions in the wheelpath of a pavement.¹

S

Sawcut

The action of using a power saw with a specialty blade (usually a diamond blade) to cut through asphalt pavement or concrete.²

Scaling

Shallow, fine, or hairline cracks that extend only through the upper surface of the concrete approximately ¼ to ½ inch. It may also be caused by deicing salts, improper construction, freeze-thaw cycles and poor aggregate.⁵

Scratch Course

A paving course used to fill wheel ruts and other local, small depressions to the level of the surrounding pavement.²

Screed

The part of a paving machine that spreads, smoothes, and provides initial compaction.¹

Screeding

A process in PCC paving where excess portions of the roughly placed PCC are cut off in order to bring the slab to the required elevation. This is usually done by dragging a straightedge across the slab at the required elevation.¹

Scuffing

A surface blemish on newer pavement that is always caused by a fairly concentrated maneuver or rotation of a tire in a stationary or braking mode. The problem is generally of a temporary and superficial nature.²

Seal coat

A collective term for several different kinds of thin surface treatments used to improve the surface texture and protect an Hot Mix Asphalt surface. Seal coats include fog seals, slurry seals, microsurfacing, and BSTs.¹

Segregation

Regarding Hot Mix Asphalt, the broad definition is "a lack of homogeneity in the Hot Mix Asphalt constituents of the in-place mat of such a magnitude that there is a reasonable expectation of accelerated pavement distress(es)." Typically though, "segregation" refers to aggregate segregation, which is "the non-uniform distribution of coarse and fine aggregate components within the asphalt mixture."¹

Select Material

Suitable material obtained from roadway cuts, borrow areas, or commercial sources and designated or reserved for use as foundation for the subbase, for subbase material, shoulder surfacing, or other specific purposes.⁴

Shoulder

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.⁴

SHA

State Highway Association.¹

Shear Flow

To undergo plastic deformation and movement without cracking or breaking.¹

Sheepsfoot Roller

Steel wheel roller with large protrusions on the drum used for soil compaction.¹

Shoulder Rehabilitation

Includes placing stone as needed along low shoulders and at gravel driveways to allow for a smooth transition.

Shoving

A form of plastic movement typified by an abrupt wave across the pavement surface. The distortion is perpendicular to the traffic direction. Usually occurs at points where Hot Mix Asphalt abuts a rigid object.¹

Shrinkage Cracking

Cracks formed due to material contraction either from temperature drops (both Hot Mix Asphalt and PCC) or water loss during setting and curing (PCC).¹

SHRP

Strategic Highway Research Plan.¹

Sidewalk

A path along the side of road that may accommodate moderate changes in grade (height) and is normally separated from the vehicular section by a curb.⁷

Sieve

In laboratory work an apparatus in which the openings are square for separating sizes of material.¹¹

Skid Resistance

The ability of a pavement to offer resistance to slipping or skidding.¹

Skid Steer

A self-propelled land vehicle propelled by an internal combustion engine with hydraulically-powered mechanical arms capable of utilizing various connecting attachments to aid in construction or demolition in many construction-related fields. This type of machine is sometimes called a skid loader.²

Slag

The air-cooled, non-metallic byproduct of a blast furnace operation consisting essentially of silicates and alumino-silicates of lime and other bases that is developed simultaneously with iron in a blast furnace. Crushed slag weighs about 80 pounds per cubic foot.⁴

Slipform PCC Paving

One of two chief methods of PCC paving. Slipform paving is defined as a process used to consolidate, form into geometric shape and surface finish a PCC mass by pulling the forms continuously through and surrounding the plastic concrete mass.¹

Slippage Cracking

In flexible pavements, crescent or half-moon shaped cracks generally having two ends pointed into the direction of traffic caused by breaking or turning wheels.¹

Slow Curing Asphalt

Liquid asphalt composed of asphalt cement and oils of low volatility.⁴

Slump

The distance a specified conical form of fresh PCC falls when the form is removed. The slump test involves hand placing an amount fresh concrete into a metal cone and then measuring the distance the fresh PCC falls (or "slumps") when the cone is removed.¹

Slurry Seal

A homogenous mixture of emulsified asphalt, water, well-graded fine aggregate and mineral filler. Slurry seals are used to fill existing pavement surface defects as either a preparatory maintenance or as a wearing course.¹

Soil Cement Base

Consists of a mixture of the natural subgrade material and Portland cement in the proper amounts. After thorough mixing, the proper amount of water is added, and the material is compacted to the required thickness.⁴

Soil Support

A term expressing the ability of the roadbed material, or subgrade soil, to support the traffic loads transmitted through a flexible pavement structure.⁴

Solubility

A measure of the purity of an asphalt binder.¹¹

Soundness

Term often used to (1) describe an aggregate's weathering resistance characteristics or (2) the ability of a hardened cement paste to retain its volume after setting without delayed destructive expansion.¹

Spalling

In rigid pavement, cracking, breaking or chipping of joint/crack edges.¹

Special Provisions

Special directions, provisions, or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. Special provisions set forth the final contractual intent in the matter involved.⁴

Specification, End-result

A specification in which the final characteristics of the product are stipulated, and the contractor is given considerable freedom in achieving those characteristics.¹

Specification, Method

A specification that outlines a specific materials selection and construction operation process to be followed in providing a product.¹

Specification, Performance

A specification in which the product payment is directly dependent upon its actual performance.¹

Specification, Statistical Acceptance

A formal acceptance procedure based on statistical methods.¹

Specification, Warranty

A type of performance specification where the agency specifies pavement performance only and the contractor warrants the pavement for performance over a specific amount of time. During the warranty period, any defects attributable to construction are repaired at the contractor's expense.¹

Specification, Proprietary Product

A specification used when a generic description of a desired product or process cannot be easily

formulated. It usually contains an "or equivalent" clause to allow for some measure of competition in providing the product.¹

Speed Bumps

Pavement transitions created by milling on either side of these speed bumps.⁸

Stability

A term often used to describe an Hot Mix Asphalt's ability to resist deformation under loading.¹

Stabilized Aggregate or Soil

Aggregate or soil to which a stabilizing agent has been added in order to bind otherwise loose particles to one another, providing strength and cohesion. The stabilizing agent is usually some sort of cementitious or bituminous material.¹

Stage Construction

The construction of roads and streets by applying successive layers of Asphalt Concrete according to design and a predetermined time schedule.⁴

Stoke

A unit of kinematic viscosity, equal to the viscosity of a fluid in poises divided by the density of the fluid in grams per cubic centimeter.¹¹

Stone Mastic Asphalt

A high performance surface asphalt mix using high content of asphalt through use of fiber fillers. Very high quality aggregates are used.⁴

Street

A general term denoting a public way for purpose of vehicular travel, including the entire area within the right-of-way.⁴

Street Facility ID

A specific GIS based number used by the City of Durham to designate a street segment.

Stripping

In flexible pavements, the loss of bond between aggregates and asphalt binder that typically begins at the bottom of the Hot Mix Asphalt layer and progresses upward. When stripping begins at the surface and progresses downward it is usually called raveling.¹

Subbase

The portion of the pavement structure between the subgrade and the base course. A subbase course is not always needed or used.¹

Subconsultant

An individual contracted by a consultant to provide services related to or part of those which the consultant owes the client under his or her primary contract with the client.¹⁰

Subcontractor

Any individual, partnership, or corporation to whom the contractor sublets part of the contract.⁴

Subdrain

A structure placed beneath the ground surface to collect and carry away underground water.⁴

Subgrade

The material upon which the pavement structure is built. It can either be in-situ material or structural fill material.¹

Subgrade Stabilization

Modification of roadbed soils by admixing with stabilizing or chemical agents that will increase load-bearing capacity, firmness, and resistance to weathering or displacement.⁴

Superpave

Superior Performing Asphalt Pavements. An overarching term for the results of the asphalt research portion of the 1987 - 1993 Strategic Highway Research Program (SHRP). Superpave consists of (1) an asphalt binder specification, (2) an Hot Mix Asphalt mix design method and (3) Hot Mix Asphalt tests and performance prediction models. Each one of these components is referred to by the term "Superpave".¹

Superpave Gyrotory Compactor (SGR)

A device used during Superpave mix design or field testing activities for compacting samples of Hot Mix Asphalt into specimens used for volumetric analysis.¹¹

Superpave Mix Design

A mix design system that integrates the selection of materials (asphalt, aggregate) and volumetric proportioning with the project's climate and design traffic.¹¹

Surface Course

The top pavement layer and the layer that comes in contact with traffic.¹

Surface Drainage

Removal of free water from various structural components of the pavement or the surrounding soil.⁴

Swale

A shallow, trough-like depression that carries water mainly during rainstorms or snow melts.²

Swell

Characterized by an upward bulge in the pavement's surface—a long, gradual wave more than 10 feet long and can accompanied by surface cracking usually caused by frost action in the subgrade or by swelling soil.⁸

T

Tack Coat

Asphalt oil, usually an emulsion, applied to existing pavement during repairs or overlay paving to create a bond between the old and new asphalt (NPCA).¹

Test Strip

A small section of mat laid out at the beginning of a project with the purpose of determining the best roller type, sequence, number of passes and rolling pattern to use.¹

Thermal Cracking (also called "transverse cracking")

Cracking caused by shrinkage of the pavement surface due to low temperatures.¹

Thixotropic

The property exhibited by certain substances of becoming less viscous when agitated and returning to a more viscous state upon standing. "Thixotropic" comes from the Greek words *thixis*, which means "the act of handling" and *trope*, meaning "change".¹

Tie Bars

Either deformed steel bars or connectors used to hold the faces of abutting slabs in contact. Although they may provide some minimal amount of load transfer, they are not designed to act as load transfer devices and should not be used as such (from the 1993 AASHTO *Guide*).¹

Time Available for Compaction (TAC)

The time (in minutes) that a particular mix is at the right temperature range for efficient compaction. Compaction must be accomplished before the mat cools to a temperature below 175 degrees.¹

TMD (also called "Rice density")

Theoretical maximum density. The theoretical maximum density of an Hot Mix Asphalt if it contained zero air voids.¹

TMG

Traffic Monitoring Guide.¹

Transverse Cracking (also called "thermal cracking")

Cracking caused by shrinkage of the pavement surface due to low temperatures.¹

Transverse Joint

Constructed across the pavement whenever paving is being suspended (i.e. for the day).²

U

Underdrain

A perforated or porous-walled pipe placed with suitable pervious backfill beneath the ground surface to collect and carry away underground water.⁴

UTW

Ultra-Thin Whitetopping. Whitetopping where the PCC overlay is in the 50 - 100 mm (2 - 4 inch) range.¹

V

Vibratory Plate

A gas-powered compaction tool used to compact areas that cannot be reached by a larger vibratory roller. The force is produced by a rotating eccentric weight that causes the large plate bottom to pulsate.²

Vibratory Roller

A double steel drum roller that has two types of compactive forces that are applied to the Hot Mix Asphalt; static weight, caused by the weight of the machine and dynamic (impact), produced by a rotating eccentric weight inside the drums which rotates about the shaft inside the drum.²

Viscosity

This is a measure of the resistance to flow. The term is used as "high viscosity" or "low viscosity." A high viscosity material refers to a heavy or still material that will not flow easily. A low viscosity material is the opposite. Viscosity is measured in absolute units called poises. It was formerly measured in empirical values of time, distance, and temperature. This method was called Saybolt Furol Viscosity.⁴

VMA

Voids in the Mineral Aggregate. The volume of intergranular void space between the aggregate

particles of a compacted paving mixture that includes the air voids and the effective asphalt content, expressed as a percent of the total volume of the specimen.¹

Voids

Empty spaces (air pockets) in a compacted mix surrounded by asphalt coated particles.¹¹

Voids in Total Mix (VTM)

Total empty spaces (air pockets) in a compacted mix expressed as a percentage of the total solid volume.¹¹

Voids in the Mineral Aggregate (VMA)

The volume of void space (air pockets) between the aggregate particles of a compacted mix that includes both the VTM and the effective asphalt content, expressed as percentage of the total volume of the compacted mix.¹¹

Voids Filled with Asphalt (VFA)

The percentage of the voids in the mineral aggregate structure that are filled with asphalt, not including the absorbed asphalt.¹¹

W

Water-cement Ratio

The volume of water in relation to the volume of portland cement.¹

Wearing Course

The pavement layer in direct contact with traffic loads. Sometimes "wearing course" is used interchangeably with "surface course" and sometimes it is used to mean the top portion of the surface course. It is meant to take the brunt of traffic wear and can be removed and replaced as it becomes worn.¹

Well Graded Aggregate

Aggregate graded from the maximum size down to filler with the object of obtaining an asphalt mix with a controlled void content and high stability.¹¹

Weathering

The wearing away of the pavement surface due to a loss of asphalt or tar binder and dislodged aggregate particles.⁸

Wet Mixing Period

The interval of time between the beginning of application of asphalt binder and the opening of the mixer gate in a batch plant.¹¹

Wheel Loads

See ESAL

Wheelpath

That portion of a pavement that is contacted by the wheels/tires of vehicles in a typical traffic stream. There are generally two wheelpaths per lane.¹

Whitetopping

A PCC overlay of an existing flexible pavement.¹

Workability

A term that refers to a material's ability to be placed and compacted. Workable mixes are easy to place and compact and are generally less viscous than mixes with poor workability.¹

X

Y

Yards

An unit length in several different systems equivalent to 3 feet or 36 inches.⁷

Z

¹ Pavement Guide Interactive. <http://pavementinteractive.org/index.php?title=Glossary>. Accessed Sept. 1, 2010.

² EBY Paving. <http://www.ebypaving.com/glossary.htm>. Accessed Sept. 1, 2010.

³ EjCDC C-700 Standard General Conditions of the Construction Contract. National Society of Professional Engineers of EjCDC, 2002.

⁴ Missouri Asphalt Pavement Association. <http://www.moasphalt.org/facts/asphalt/glossary.htm#w>. Accessed Sept. 1, 2010.

⁵ Standard Practice for Roads and Parking Lots Pavement Condition. ASTM International, 1999.

⁶ The Free Dictionary. <http://www.thefreedictionary.com/>. Accessed Sept. 2, 2010.

⁷ Wikipedia. <http://en.wikipedia.org/wiki/>. Accessed Sept. 1, 2010.

⁸ AECOM. Pavement Evaluation and Repair Manual. City of Durham, 2009.

⁹ Walker, Donald. Pavement Surface Evaluation and Rating "Asphalt Road PASER Manual". Wisconsin Transportation Information Center, 2002.

¹⁰ University of Colorado. <http://www.colorado.edu/engineering/civil/db/DBS/glossary.cgi?word=Subconsultant>. Accessed Sept. 1, 2010.

¹¹ NCDOT. Definitions and Terminology Pertaining to Asphalt Pavement Production and Construction. http://www.ncdot.org/doh/operations/dp_chief_eng/constructionunit/paveconst/Asphalt_Mgmt/qms_manual/2009/appindex.pdf. Accessed Sept. 2, 2010.